

REMARKS¹

In the outstanding Office Action, the Examiner made the following rejections:

- A. Claims 1, 3, 6, 7, and 27 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,121,689 to Capote et al. ("Capote") in view of U.S. Patent No. 6,426,556 to Lin ("Lin");
- B. Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Capote and Lin in view of U.S. Patent No. 6,077,726 to Mistry et al. ("Mistry");
- C. Claims 21, 25, and 28 under 35 U.S.C. § 103(a) as being unpatentable over Capote and Lin, and further in view of U.S. Patent Application Publication No. 2002/0127844 to Grill et al. ("Grill"); and
- D. Claims 23, 26, and 29 under 35 U.S.C. § 103(a) as being unpatentable over Capote in view of U.S. Patent No. 6,462,426 to Kelkar et al. ("Kelkar"), and further in view of Grill.

By this amendment, Applicant has amended claims 1, 21, and 23, and has added new claims 30-34. Claims 1, 3, 6-21, 23 and 25-34 are now pending in this application, with claims 1, 3, 6-8, 21, 23, and 25-34 presented for examination.

¹ The Office Action contains statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the Office Action.

Applicant respectfully traverses the rejection of claims 1, 3, 6-8, 21, 23, and 25-29 under 35 U.S.C. § 103(a) on the ground that the Examiner has not established a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art (taken alone or in combination) must teach or suggest all the claim limitations. See MPEP § 2142, 8th Ed., Rev. 5 (August 2006). Moreover, “in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.” *USPTO Memorandum* from Margaret A. Focarino, Deputy Commissioner of Patent Operations, May 3, 2007, page 2. “[T]he analysis supporting a rejection ... should be made explicit” and it is “important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the manner claimed.” *Id.* (citing *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007)).

In this application, no *prima facie* case of obviousness has been established for at least the reasons that the applied prior art references, in combination, fail to teach or suggest each and every element of the claims.

A. Claims 1, 3, 6, 7, and 27

Capote fails to teach or suggest a combination including “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes, the plurality of second bump electrodes being electrically connected to the connecting electrodes,” as recited in amended claim 1. Capote discloses “an integrated

circuit chip 10 is shown mounted on a substrate 20,” wherein “[a] plurality of solder pads on top surface 26 of the substrate 20 are arranged to receive corresponding solder bumps 14.” Capote, col. 9, lines 5-8 (emphasis added). To the extent that the solder bumps of Capote can reasonably be construed as corresponding to Applicant’s claimed “second bump electrodes,” Capote fails to teach or suggest that solder bumps are formed on a bottom surface of substrate 20. That is, Capote fails to teach or suggest a combination including “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes, the plurality of second bump electrodes being electrically connected to the connecting electrodes,” as recited in amended claim 1.

Lin fails to cure the deficiencies of Capote. Lin also teaches bump electrodes formed on only one side of a substrate (see, e.g., Fig. 8b). Lin, however, does not teach or suggest forming bump electrodes on a bottom surface of a substrate. That is, Lin fails to teach or suggest a combination including “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes, the plurality of second bump electrodes being electrically connected to the connecting electrodes,” as recited in amended claim 1.

In the Office Action, the Examiner asserts that certain elements recited in Applicant’s claims are product-by-process elements, and thus not given any patentable weight. Although Applicants disagree with the Examiner’s assertions, elements added to amended claims 1, 21, and 23, are not product-by-process limitations, as they impart

distinctive structural characteristics to the claimed structure, as discussed below.,

MPEP § 2113 states:

[t]he structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product ... terms such as “welded,” “intermixed,” “ground in place,” “press fitted,” and “etched” are capable of constructions as structural limitations. MPEP § 2113, 8th Ed., Rev. 5 (August, 2006).

Here, the added element “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes, the plurality of second bump electrodes being electrically connected to the connecting electrodes,” as recited in amended claim 1 imparts clear structural limitations on the claimed “wiring board.” That is, amended claim 1 recites a “wiring board” which has “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes,” wherein “the plurality of second bump electrodes [are] electrically connected to the connecting electrodes.” The clear structural limitations imparted in amended claim 1 include the location of the claimed “second bump electrodes” on the claimed “wiring board,” and that the claimed “second bump electrodes” are electrically connected to the claimed “connecting electrodes.” Accordingly, if the prior art fails to teach or suggest a wiring board having the same structure, the prior art can neither anticipate nor render obvious amended claim 1.

For at least the reason that the prior art references, taken alone or in combination, fail to teach or suggest every element recited in claim 1, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 1 under 35 U.S.C. § 103(a).

Claims 3, 6, 7, and 27 depend from amended claim 1, and thus require all of the elements recited in amended claim 1. Because Capote in view of Lin fails to teach or suggest each and every element of amended claim 1, that reference also fails to teach or suggest each and every element required by the dependent claims. A *prima facie* case of obviousness, thus, cannot be established with respect to claims 3, 6, 7, and 27. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 3, 6, 7, and 27 under 35 U.S.C. § 103(a) be withdrawn.

B. Claim 8

Claim 8 depends from claim 1 and thus requires all of the elements recited in claim 1. As discussed above, Neither Capote nor Lin teach or suggest a combination including “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes, the plurality of second bump electrodes being electrically connected to the connecting electrodes,” as recited in amended claim 1, and required by claim 8. Mistry fails to cure the above-noted deficiencies of Capote and Lin.

The Examiner appears to cite Mistry because the reference allegedly “teaches a passivation film comprising at least one layer formed of an organic film coating a connecting electrode (Fig. 1, 16).” Office Action, page 5. This alleged teaching, even if

combinable with Capote and Lin, fails to cure the above-noted deficiencies of Capote and Lin. That is, Mistry also fails to teach or suggest a combination including “a plurality of second bump electrodes formed on a side of the wiring board opposite to the connection electrodes, the plurality of second bump electrodes being electrically connected to the connecting electrodes,” as recited in amended claim 1, and required by claim 8.

For at least the reason that the prior art references, taken alone or in combination, teaches or suggests every element required by claim 8, a *prima facie* case of obviousness cannot be established with respect to claim 8. Accordingly, Applicant respectfully requests that the Examiner enter the amendment to claim 1, and withdraw the rejection of claim 8 under 35 U.S.C. § 103(a).

C. Claims 21, 25, and 28

As discussed above, neither Capote nor Lin teaches or suggests a combination including “at least one second bump electrode formed on a side of the wiring board opposite to the at least one connecting electrode, the at least one second bump electrode being electrically connected to the at least one connecting electrode,” as recited in amended claim 21. Grill fails to cure the deficiencies of Capote and Lin.

Grill is cited by the Examiner for allegedly teaching “[a] chip having a low-K dielectric film (Fig. 3, 310) and wiring film formed thereon (Paragraph 4).” Office Action, page 6. Grill generally teaches “provid[ing] an air gap-containing interconnect structure which maximizes air gap volume fraction.” Grill, paragraph [0016]. Grill is silent as to a

semiconductor structure having electrodes formed thereon. Grill thus fails to teach or suggest a combination including “at least one second bump electrode formed on a side of the wiring board opposite to the at least one connecting electrode, the at least one second bump electrode being electrically connected to the at least one connecting electrode,” as recited in amended claim 21.

For at least the reason that the prior art references, taken alone or in combination, fail to teach or suggest every element recited in claim 21, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 21 under 35 U.S.C. § 103(a).

Claims 25 and 28 depend from claim 21, and thus require all of the elements recited in claim 21. Because Capote, Lin, and Grill, taken alone or in combination, fail to teach or suggest every element recited in claim 21, that combination of references also fail to teach or suggest every element required by claims 25 and 28. A *prima facie* case of obviousness has therefore not been established. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 25 and 28 under 35 U.S.C. § 103(a).

D. Claims 23, 26, and 29

As discussed above, neither Capote nor Lin nor Grill teaches or suggests a combination including “at least one second bump electrode formed on a side of the wiring board opposite to the at least one connecting electrode, the at least one second bump electrode being electrically connected to the at least one connecting electrode,”

as recited in amended claim 23. Kelkar fails to cure the deficiencies of Capote, Lin and Grill.

Kelkar is cited by the Examiner for allegedly teaching “a plurality of passivation layers having a pad of different material formed therein.” Office Action, page 8.

As shown in FIG. 2, for example, Kelkar generally teaches forming a bump 214 on a surface of a substrate 208. Kelkar, however, does not teach or suggest forming bumps on a side of the substrate 208 opposite to the side on which bump 214 is formed. Kelkar thus fails to teach or suggest a combination including “at least one second bump electrode formed on a side of the wiring board opposite to the at least one connecting electrode, the at least one second bump electrode being electrically connected to the at least one connecting electrode,” as recited in amended claim 23.

For at least the reason that the prior art references, taken alone or in combination, fail to teach or suggest every element recited in claim 23, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 23 under 35 U.S.C. § 103(a).

Claims 26 and 29 depend from claim 23, and thus require all of the elements recited in claim 23. Because Capote, Lin, Grill and Kelkar, taken alone or in combination, fail to teach or suggest every element recited in claim 23, that combination of references also fail to teach or suggest every element required by claims 26 and 29. A *prima facie* case of obviousness has therefore not been established. Accordingly,

Applicant respectfully requests that the Examiner withdraw the rejection of claims 26 and 29 under 35 U.S.C. § 103(a).

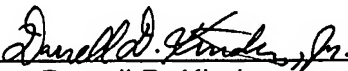
In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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